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| 10/537,224 | 11/16/2005 | Michael Scherer | RPP-201 | 3427 |

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| EXAMINER | |
|---|---|
| BAND, MICHAEL A | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/537,224 | SCHERER ET AL. | |
| | Examiner | Art Unit | |
| | MICHAEL BAND | 1795 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *28 May 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *55-108* is/are pending in the application.

4a) Of the above claim(s) *92-108* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *55-91* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 June 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/14/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant traverses the election requirement on the grounds that Examiner has failed to properly construe and consider the claims under the "special technical feature" standard since each of the features noted in the species groups have in common at least each of the features recited in claims 1-3. Additionally, Applicant argues that the "unity of invention" standard must be evaluated on the basis of independent claims only and since the only independent claim is claim 1 and is generic to each of the species, none of the claims can be properly restricted as species under the unity of invention standard. Applicant's arguments are not found persuasive.

MPEP §1850(II) states that an international application should relate to only one invention or, if there is more than one invention, the inclusion of those inventions in one international application is only permitted if all inventions are so linked as to form a single general inventive concept (PCT Rule 13.1). With respect to a group of inventions claimed in an international application, unity of invention exists only when there is a technical relationship among the claimed inventions involving one or more of the same or corresponding special technical features. The expression "special technical features" is defined in PCT Rule 13.2 as meaning those technical features that define a contribution which each of the inventions, considered as a whole, makes over the prior art. The determination is made on the contents of the claims as interpreted in light of the description and drawings, if any.

Whether or not any particular technical feature makes a "contribution" over the prior art, and therefore constitutes a "special technical feature," should be considered with respect to novelty and inventive step. For example, a document discovered in the international search shows that there is a presumption of lack of novelty or inventive step in a main claim, so that there may be no technical relationship left over the prior art among the claimed inventions involving one or more of the same or corresponding special technical features, leaving two or more dependent claims without a single general inventive concept.

As set forth in the Requirement for Restriction of April 528, 2008, the US Patent No. 6,346,176 reference on the International Search Report for analogous International Application No. PCT/EP03/13649, and US Patent Nos. 6,277,507; 4,883,574 demonstrate that the independent claim of the application does not avoid the prior art. The features that Applicant argues are common to each of the species are not special technical features as described in MPEP §1850. Therefore, the special technical feature of the application is anticipated by or in view of the prior art and accordingly, applying the unity of invention standard to the independent claims, unity of invention does not exist with respect to the claimed inventions.

The requirement is still deemed proper and is therefore made **FINAL**.

2. Claims 92-108 are hereby withdrawn.

### *Abstract*

3. The abstract of the disclosure is objected to due the abstract being 375 words. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Correction is required. See MPEP § 608.01(b).

### *Specification*

4. The disclosure is objected to because of the following: Para [0020] contains the compound $SiO_3$. This is not a known or possibly-formed compound.

### *Drawings*

5. The drawings are objected to because submitted drawings are in GERMAN. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an

amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

6. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because submitted drawings must be in ENGLISH. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

## *Claim Rejections - 35 USC § 112*

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 69-70 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 69 recites the limitation "the quotient". There is insufficient antecedent basis for this limitation in the claim.

9. Claims 83-91 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 83-84 and 87-88 have the limitation reactive component DEF. It is unknown or unclear what DEF signifies.

10. Claims 83-91 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 83-91 have the limitation a value of a deficit. It is unknown or unclear what a value of a deficit is related to or signifies.

11. Claim 89 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 89 has the limitation a number of interfaces between high-refracting and low-refracting coatings $N_1$ greater than 3. It is unknown or unclear what is being claimed.

### *Claim Rejections - 35 USC § 102*

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 55-74, 78, 80- are rejected under 35 U.S.C. 102(b) as being anticipated by Sullivan et al (US Patent No. 6,217,720).

With respect to claims 55-57 and 81-82, Sullivan et al discloses a method for depositing a complex optical multilayer coating on substrate (abstract), where fig. 1 depicts a reactive AC magnetron sputtering apparatus having targets (i.e. first constituent) [3] and a reactive gas inlet (i.e. second constituent) [9] of Ar and $O_2$. Sullivan et al further discloses that deposition power and oxygen flow must be rapidly adjusted to maintain a desired stoichiometry of the coating (col. 5, lines 16-19; col. 8, lines 26-42). Fig. 1 also depicts a substrates [5] supported on a cage [4], where said cage is rotated (col. 6, lines 63-67). Sullivan et al also discusses fitting theoretical values derived from a model of the deposited layers to correspond to actual values obtained and continually controlling a process variable (i.e. oxygen partial pressure) to ensure homogeneity (i.e. stoichiometry) of the deposited layers so that a valid thickness determination can be made from said theoretical values (col. 5, lines 64-67; col. 6, lines 1-5).

With respect to claims 58-63, 78, and 80, Sullivan et al further discloses in fig. 1 the apparatus having an optical monitor (i.e. grating & PDA array) [7] for measuring the transmittance of the substrates [5], with fig. 2 depicting said optical monitor [7] using a computer [13] to determine layer thickness (col. 7, lines 5-10 and 25-31). Fig. 2 also depicts the thickness determination computer [13] affecting a process control computer

[12] which in turn affects the oxygen flow control [11] and therefore affects the plasma. Sullivan et al also discloses measuring transmittance, reflectance, or ellipsometric value of the multilayer coating, with the theoretical values obtained by adjusting one or more layer thicknesses of the deposited layers in the theoretical model to fit the calculated data of the model to the measured data (col. 4, lines 50-56).

With respect to claims 65-68 and 72-74, Sullivan et al further discloses that homogeneity (i.e. stoichiometry) of the coating is achieved by varying (i.e. increasing and decreasing) a flow rate of the reactive gas, typically oxygen, so as to maintain a constant partial pressure of that gas (col. 5, lines 25-29). Fig. 2 also depicts that a process control computer [12] regulates both oxygen flow control [11] and power control (i.e. cathode power) [14].

With respect to claims 69-70, Sullivan et al further discloses in figs. 5-6 relating oxygen partial pressure, sputtering rate (i.e. time), and sputtering power.

With respect to claim 71, Sullivan et al further discloses that the reactive gases are oxygen ($O_2$) or nitrogen ($N_2$) (fig. 1; col. 8, lines 11-13).

With respect to claims 83-86, 88, and 90-91, Sullivan et al discloses a method for depositing a complex optical multilayer coating on substrate (abstract), where fig. 1 depicts a reactive AC magnetron sputtering apparatus having targets (i.e. first constituent) [3] and a reactive gas inlet (i.e. second constituent) [9] of Ar and $O_2$. Sullivan et al further discloses that deposition power and oxygen flow must be rapidly adjusted to maintain a desired stoichiometry of the coating (col. 5, lines 16-19; col. 8, lines 26-42). Fig. 1 also depicts a substrates [5] supported on a cage [4], where said

cage is rotated (col. 6, lines 63-67). Sullivan et al also discusses fitting theoretical values derived from a model of the deposited layers to correspond to actual values obtained and continually controlling a process variable (i.e. oxygen partial pressure) to ensure homogeneity (i.e. stoichiometry) of the deposited layers so that a valid thickness determination can be made from said theoretical values (col. 5, lines 64-67; col. 6, lines 1-5). Sullivan et al also discusses depositing four $Nb_2O_5$ layers, with $SiO_2$ layers in-between the $Nb_2O_5$ layers, thus the $SiO_2$ layers are a second layer and an interface layer.

With respect to claim 87, Sullivan et al further discloses typical deposition rates for $Nb_2O_5$ and $SiO_2$ as approximately 0.1 nm/s for RF sputtering (col. 2, lines 12-15), with deposition rates for AC sputtering in the range of 0.1 nm/s to 0.7 nm/s (col. 4, lines 57-62). Figs. 14-15 depicts layers having deposition times of approximately 50-35 sec, thus the thickness of the interface layer (i.e. $SiO_2$) is in the range of 3.5 nm-35 nm.

With respect to claim 89, Sullivan et al further discloses a reactive deposition of five different $Nb_2O_5$ layers, with $SiO_2$ layers between each $Nb_2O_5$ layer (col. 10, lines 58-64). Sullivan et al also discloses that a 58-layer coating is possible (col. 11, lines 39-41), thus the number of interface (i.e. $SiO_2$) layers is greater than 3.

14. Claim 75-77 and 79 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Sullivan et al (US Patent No. 6,217,720).

With respect to claims 75-77, Sullivan et al further discloses the cage [4] supporting the substrates [5] rotating about a vertical axis with a stepping motor [6].

Sullivan et al also discloses using deposition rates of between 0.7 nm/s and 0.1 nm/s (col. 4, lines 57-62). Although a rotation speed is not specified, it is either inherent or obvious that the substrate is moved at a predetermined velocity, whether said predetermined velocity is a constant or variable velocity, in order to maintain these deposition rates.

With respect to claim 79, Sullivan et al discloses that the target-to-substrate distance is approximately 12 cm (col. 2, lines 12-15), which is a relatively small distance. Plasma in a sputtering apparatus is well known to be at least 100$^{o}$C, therefore it is either inherent or obvious that the substrate has heat applied via deposition material from a sputter target.

## ***Conclusion***

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Band whose telephone number is (571) 272-9815. The examiner can normally be reached on Mon-Fri, 8am-4pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

16. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. B./

Examiner, Art Unit 1795

/PATRICK RYAN/

Supervisory Patent Examiner, Art Unit 1795